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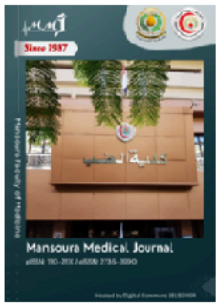

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SINO-NASAL EPITHELIAL TUMOURS: A CLINICO-PATHOLOGICAL STUDY

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ABSTRACT

BACKGROUND : Epithelial neoplasms are uncommon lesions affecting the sino-nasal tract.

AIM : To study the incidence, mode of presentation and histological types of sino-nasal epithelial tumours in the surgical pathology material and surgical procedures and outcome.

MATERIALS AND METHODS : All sino-nasal epithelial tumours, biopsied or surgically excised over a period of six years, were studied. The tumours were classified as benign or malignant. The histology was correlated with the clinical presentation, investigations, surgical procedures and outcome .

RESULTS : In six years, there were 139 sino-nasal tumours. One-hundred one epithelial tumors (72.6%) outnumbered the non-epithelial tumours were diagnosed on the basis of histopathology. Forty-five were benign (44.5%) and 56 malignant (55.5%); occurring predominantly in males. Benign lesions included three fungiform papillomas (exophytic) (6.6% of the benign tumors) and 42 inverted papillomas, with recurrence in five inverted papillomas (11.9%). Malignant changes were detected in two cases of inverted papillomas (4.8%) at initial surgery and in one of five recurrent cases (20%). Endoscopic and external approaches were of equivalent results. Squamous cell carcinomas were the commonest among malignant tumours with thirty cases(53.2%) and three of these

were associated with inverted papilloma either synchronously or metachronously. The second most frequent malignant tumour was adenoid cystic carcinoma with twelve cases. Other rare types included the variants of squamous carcinoma, adenocarcinomas, muco-epidermoid carcinoma, and undifferentiated carcinomas. Smoking and environmental pollution were blamed as etiologic factors. Cases mostly presented in late stages. Multimodality treatment including surgery, radiotherapy and chemotherapy was the option to achieve optimal results but still with poor prognosis.

CONCLUSION: Sino-nasal epithelial tumours are rare lesions, with male preponderance. Inverted papillomas and squamous cell carcinomas are the most frequent neoplasms.

Keywords : Nasal cavity, Paranasal sinuses, Tumors, Papillomas, Carcinomas

INTRODUCTION

The nasal cavity and the paranasal sinuses form a single functional unit with common pathological processes affecting both of them, most of which are largely inflammatory. The sino-nasal epithelium is an uncommon site for neoplastic processes, and can present an entire range of both epithelial and non-epithelial tumours.(1) The epithelial tumors are three times more frequent than the non-epithelial tumours. 1 The signs and symptoms of benign or malignant sinonasal neoplasms are not striking. Nasal obstruction, blood tinged mucus, and epistaxis are the most common symptoms. Early symptoms do not prompt medical attention, and a delay of several months between the onset of symptoms and diagnosis is common (2) Inverted papillomas are the most common benign neoplasms, these tumours are often multi-centric, with a marked tendency for aggressive behaviour, recurrence after surgical excision (5-20%), and transformation to an epithelial malignancy (5-9%), most commonly squamous cell carcinoma. (3) Environmental agents are considered to have causal relationship with carcinomas of the sinonasal tract, as nickel, chrome, wood dust, and tobacco4. Squamous cell carcinoma is the commonest histologic type, with an incidence of 80%. Adenoid cystic carcinomas and adenocarcinomas are next in frequency about 10 % 5.

MATERIALS AND METHODS

This is a retrospective study conducted at Mansoura University hospital-Otolaryngology department and Pathology department. The blocks and slides of all sino-nasal epithelial tumours, biopsied or surgically excised over a period of six years (2000-2005), were retrieved and reviewed. All slides were stained by the routine haematoxylin and eosin stains. Immunohistochemical stain was used in cases of undifferentiated carcinoma to differentiate these tumours from olfactory neuroblastoma and lymphoma. In the only case of spindle cell carcinoma, immunohistochemical studies of cytokeratin were performed to confirm the epithelial nature of the tumour. Immunohistochemical studies were performed on formalin-fixed, paraffin-embedded sections using the labeled streptavidin-biotin-peroxidase complex method with DAB as chromogen. The following antibodies were evaluated immunohistochemically: Cytokeratin AE1\ AE2 (prediluted code N1590 DAKO cooperation carpinteria, CA93013 USA), Synoptophysin (prediluted code No N1566 DAKO cooperation USA) and leucocyte common antigen (1: 50 2B11 and PD 7\26 code No. M0701 Dako, Denmark A\S), Heat-induced epitope retrieval (0.01 mmol\L citrate buffer, PH 6.0) was performed as follows: slides were heated on microwave for 10 minutes , then cooled for 20 minutes. Primary antibody incubation was performed for 30 minutes at room temperature. The tumours were classified as benign or malignant. The histology was correlated with the clinical presentation and investigations and surgical techniques, obtained from medical record section in Otolaryngology department. A significance level of 0.05 (95% confidence level) was assumed for all calculations. P value of less than 0.05 indicated that there was a statistical difference of values compared.

RESULTS

In six years, there were 139 sino-nasal tumours. One-hundred one (72.6%) were epithelial in nature, while 38 (27.4%) were non epithelial .From these 101 epithelial there were 45 (44.5%) benign and 56 (55.5%) malignant. It was noted that most patients with benign tumours were in the fourth and fifth decades (median

age 40.5 years) while malignant lesions occurred in patients over the fifth decade (median age 55 years) (table-1).All the benign tumours were sinonasal papillomas, Among the 45 cases of sinonasal papillomas, there were 32(71.1%) males and 13 (28.8%) females which is statistically significant ($P < 0.05$). Cigarette and Goza smoking were positive in 27 males and 2 females (total 64.4%). Commonest symptoms were unilateral nasal obstruction, epistaxis, protruding nasal mass and headache. By C-T scan, the nasal mass extending to ipsilateral maxillary sinus in 14 cases, ipsilateral ethmoid in 12 cases and both in 11 cases, while one was seen to affect solely the sphenoidal sinus . Seven nasal masses were limited to nasal cavity, three of them (6.6%) were fungiform (exophytic) papillomas characterized histologically by proliferating squamous epithelium growing in everted pattern. Forty-two were of the inverted type, characterized by infolding of the metaplastic stratified squamous epithelium with focal areas of ciliated columnar cells. Numerous micro-cysts containing nuclear debris and mucin were present. Stroma was either oedematous or fibro-collagenous, with chronic inflammatory cells in some. Lateral rhinotomy approach was used in 27 cases, while endoscopic approach in 15 cases. Five inverted papillomas recurred four to ten months after the initial surgery (11.9%), three of them in open approach (11.1%) and two in endoscopic approach (13.3%) which is statistically insignificant ($p>0.05$). Of these five recurred cases, one case recurred for third time (20%) which is statistically significantly higher than recurrence for initial surgery. There were malignant foci of squamous cell carcinoma detected in this case at its third recurrence. There were 2 cases of synchronous epidermoid carcinoma foci detected in the pathology specimens at initial surgery (4.8%), while that at revision surgery was (20%) which is statistically significant.

There were 56 sino-nasal carcinomas. The tumours were in 38 males and 18 females. Cigarette and Goza smoking were positive in 40 patients (71.4%), being on the left side in 30 patients, on the right side in 24 and bilateral in two. Clinical presentations were; epistaxis, unilateral nasal obstruction, hyponasal speech, loose

teeth, facial deformity, epiphora, sensory changes in the same order of frequency (Table-2). In addition to the usual symptoms of malignancy, two of the patients developed cervical lymphadenopathy 4-7 months postoperatively. C-T scan was the primary image of modality in all cases. By C-T scan, the tumours were multi-centric, with involvement of more than one site at initial presentation making difficulty in localizing original site. MRI were recommended to evaluate intracranial and\or intraorbital soft tissue invasion in suspicious lesions on C-T scan, where 8 cases showed intracranial extradural invasion, 4 with intracranial intradural invasion, 27 cases with intraorbital extraconal invasion, 3 with intraorbital intraconal invasion. Late stages were the usual at time of presentation where 21 patients were T4, 32 were T3, and 3 were T2, non in T1. Squamous cell carcinoma with its variants (basaloid and spindle cell carcinoma) reported in 30 patients (53.5%). Well or moderately differentiated squamous cell carcinoma was diagnosed in 21 while six lesions showed a poorly differentiated subtype. There were 2 cases of basaloid squamous carcinoma. Histologically, the tumors were widely invasive with solid, trabecular and cribriform growth Patterns. The neoplastic infiltrate included predominantly pleomorphic, basaloid-appearing cells. The cells are more hyperchromatic and are smaller than those of conventional squamous cell carcinoma. The peripheral layer of cells display palisading. Spindle cell squamous carcinoma was seen in a 55-year-old male which was characterized by squamous cell carcinoma with additional fascicular spindle cell component with pleomorphism and mitoses (figure 1). Adenoid cystic carcinomas were the second most frequent malignant tumour as it was diagnosed in twelve cases (21.4% of the malignant tumors). All the adenoid cystic carcinomas showed a characteristic cribriform pattern. Peri-neural invasion were seen in four cases (figure 2). Sino-nasal undifferentiated carcinoma was seen in five cases (8.9%) these tumors were composed of pleomorphic cells in sheets and lobules with focal necroses. The cells possessed scanty cytoplasm, bizarre hyperchromatic or vesicular nuclei and prominent nucleoli (figure 3). They need to

be distinguished from other poorly differentiated sino-nasal tumours as olfactory neuroblastoma and lymphoma. So, these tumors needs immunohistochemical stain of cytokeratin (positive in undifferentiated carcinoma and negative in olfactory neuroblastoma) (figure 4) and leucocyte common antigen which is positive in lymphoma and negative in olfactory neuroblastoma and undifferentiated carcinoma. The stains for synaptophysin are positive in olfactory neuroblastoma and negative in undifferentiated carcinoma and lymphoma. Muco-epidermoid carcinoma was diagnosed in four cases (7.2% of the malignant tumours) (table 3) and was seen to arise from the surface epithelium and was composed of islands with squamous and mucin-secreting cells. Two cases were low grade muco-epidermoid carcinoma and the other two were high grade based on the point scoring scheme of Brandwein et al, 6 that include (intracystic component, neural invasion, necrosis, mitosis, and anaplasia, invasion in small nests and islands, lymphatic or vascular invasion or bone invasion). Adenocarcinoma was seen in only three cases (5.4% of the malignant tumors). Adenocarcinoma of the sinonasal tract is divided into intestinal type and non-intestinal type. Adenocarcinomas are also divided into low-grade and high-grade tumours. Low-grade tumours are well differentiated with minimal mitotic activity. High-grade tumours are poorly differentiated with nuclear pleomorphism and higher mitotic activity. In our cases, all were well-differentiated with tublopapillary architecture. Transitional cell carcinomas which are closely related to squamous cell carcinoma were seen in two elderly females (3.6% of the malignant tumors). Microscopically there is ribbons of malignant cells resting on the intact basement membrane were seen. Total maxillectomy were done in 22 patients, anterior craniofacial in 12 patients, subcranial approach in 4 patients, suprastructural maxillectomy in 4, infrastructural maxillectomy in 2 patients, while 4 patients were unfit or inoperable. Available postoperative data of 2 years or more were achieved in 38 patients, where best survival (100%) with low grade muco-epidermoid carcinoma followed by adenoid cystic carcinoma (75%) while the worst survival was with undifferentiated carcinoma (25%) and basaloid squamous carcinoma (0%) (Table-4).

Table-1: Shows epidemiology of sinonasal neoplasms

	Benign neoplasms	malignant neoplasms
Incidence	44.5%	55.5%
Age	25-60 years	18-80 years
Gender	males 71.1% females 28.9%	males 67.8% females 32.2%
Smoking	64.4%	71.4%

Table-2: Shows incidence of symptoms in malignant sinonasal neoplasms

Symptoms	Incidence	Percentage
Epistaxis	42\56	75%
Nasal obstruction	39\56	69.6%
Hyponasal speech	32\56	57%
Loose teeth	25\56	44.6%
Facial deformity	18\56	32%
Epiphora	8\56	14.2%
Sensory changes	5\56	8.9%

Table-3: Shows the histopathological types of malignant sinonasal neoplasms

Histopathology	Incidence	Percentage
Squamous cell carcinoma	30\56	53.5%
Well differentiated	21\56	37.5%
Poor differentiated	6\56	10.7%
Basiloid carcinoma	2\56	3.5%
Sarcomatoid carcinoma	1\56	1.7%
Adenoid cystic carcinoma	12\56	21.4%
Muco-epidermoid carcinoma	4\56	7.1%
Adenocarcinomas	3\56	5.3%
Undifferentiated carcinoma	5\56	8.9%
Transitional cell carcinoma	2\56	3.5%

Table-4: Shows survival of 2 years by histopathology

Tumour histopathology	Survival 2 years
Muco-epidermoid carcinoma	
Low grade	2\2 (100%)
High grade	1\2 (50%)
Adenoid cystic carcinoma	6\8 (75%)
Squamous cell carcinoma	
Well differentiated	8\13 (61.5%)
Poor differentiated	2\4 (50%)
Basiloid carcinoma	0\2 (0%)
Undifferentiated carcinoma	1\4 (25%)
Adenocarcinoma	1\3 (33.3%)

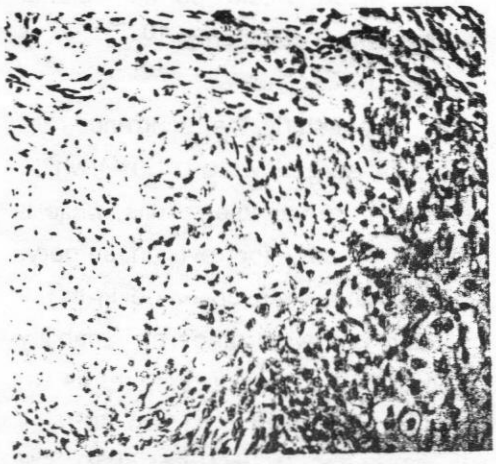

Figure (1): shows spindle cell carcinoma which is formed of islands of squamous cell carcinoma and pleomorphic spindle cells (H&E 200x)

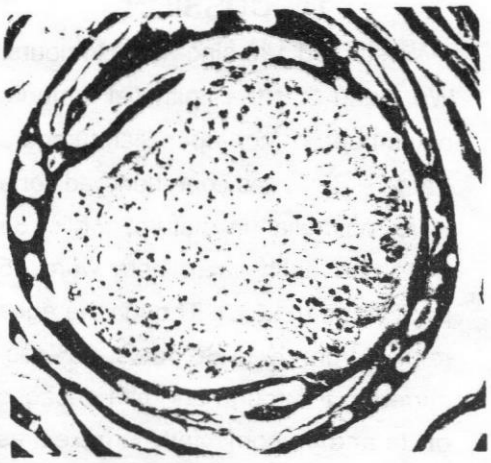

Figure (2): shows perineural invasion in a case of adenoid cystic carcinoma (H&E 200x).

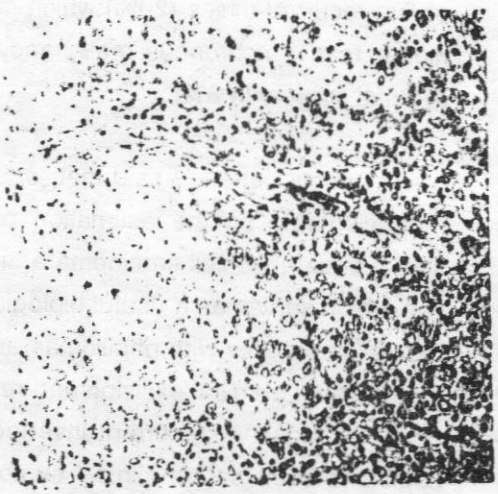

Figure (3): shows undifferentiated carcinoma formed of pleomorphic cells in sheets and lobules (H&E x200)

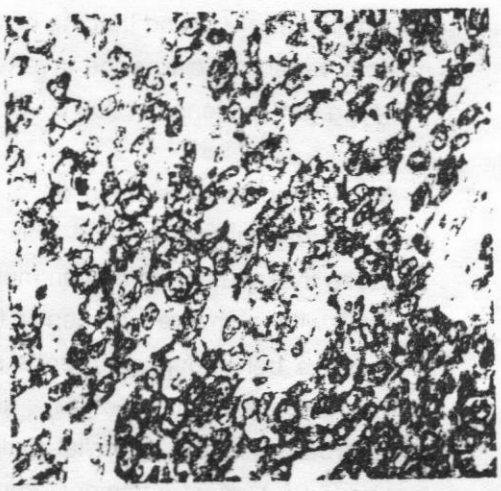

Figure (4): Shows moderate cytoplasmic staining of a case of undifferentiated carcinoma for cytokeratin (DABx 400)

DISCUSSION

We studied 139 sino-nasal tumours. We found that the epithelial tumours outnumbered non-epithelial tumours (ratio 2.65:1) as one-hundred one were epithelial in nature, while 38 were non epithelial.. There were 45 papillomas (44.5%). Though the ages ranged from 25 to 60 years, 60% occurred in the fourth and fifth decades of life and predominantly in males, as has been previously observed by Yoskovitch et al[7] . Among the types of papillomas, the inverted or endophytic subtype was the commonest variant constituting 93.3% whilst that of fungiform or exophytic was 6.7%. Yoskovitch et al [7] found that the commonest variant also was the inverted sub-type (an incidence of 70.76%).

Many studies have been devoted to inverted papillomas. [3,8,9] This is because these tumors are often multicentric, with a marked tendency for aggressive behaviour, recurrence after surgical excision (5-20%), and transformation to an epithelial malignancy (5-9%), most commonly squamous cell carcinoma. [8,9] Therefore, it would be of utmost importance to make an accurate pre-operative diagnosis which would permit optimal management of patients. [10]

In current study, the recurrence rate for initial surgery were (11.9%) which is median to variable results, while it shoots to 20% for revision surgery, this is have been observed in many studies with wide range of variability from 17% for revision surgery as reported by Han et al, 11 to 40% as mentioned by Wormald et al 12. For recurrent cases, there is a higher chance for malignant transformation than synchronous malignancy at initial surgery 12.In current study, malignant transformation occurred in one of five recurred cases (20%) which is higher than synchronous malignancy at initial surgery (4.8%).

Yasumatsu et al [13] said that, one may also rely on the estimation of serum squamous cell carcinoma antigen which serves as a useful biologic marker in patients with papillomas as it drops after surgical excision and recurs high again in recurrent inverted papilloma even before clinical symptoms appear.

The coexistence of epidermoid

carcinoma in both fungiform and inverted papillomas is explained by the presence of the human papilloma virus infection.[14] Other malignant subtypes rarely coexist with the papillomas. [14,15] We therefore feel that a thorough sampling of the entire material received in the laboratory is the golden rule to reach the final diagnosis. Orlandi et al16 advised to apply this also to specimens excised as inflammatory polyps in which might lurk papillomas.

The search for an ideal surgical approach to removing inverted papillomas has been fairly controversial with proponents for radical surgery to combat aggressive nature of the disease and others convenient with endoscopic approach with same rate of recurrence plus avoiding external scar problems. Kaza, et al [17] had recurrence rate of 14% with endoscopic approach and said that it is convenient. Han, et al11 reported near similar results between external approach (8% recurrence) and endoscopic approach (10% recurrence).

In current study no statistically significant difference between endoscopic and external approach as recurrence rate was 13.3% and 11.1% respectively, favoring endoscopic approach to avoid external facial scar and leaving external approach for salvage in case of recurrence.

Sino-nasal carcinomas are also uncommon neoplasms, constitute less than 1% of all malignancies in the body and about 3% of all head and neck cancers with incidence among males is twice that of females 18. Tobacco and air pollution have been implicated in the pathogenesis of these lesions [18]. Nickel and chrome refining processes have been implicated in the development of squamous cell carcinoma and undifferentiated carcinoma, while exposure to wood dust predispose to adenocarcinomas [4] .

In current study, males were more affected than female nearly twice, smoking habits were high (71.4%). Occupational exposure to carcinogens as nickel, chrome, wood dust did not detected in our study as most of our patients are farmers (males) and house wives (females), so suggesting smoking and environmental

pollution as etiologic factors.

Goepfert, et al 18 said that most of patients presented in the advanced stage with involvement of nasal and para-nasal sinuses and hence accurate determination of the site of origin is difficult. Besides, in the early stages of the disease, the signs and symptoms of the neoplastic processes are essentially similar to inflammatory pathology of the sino-nasal tract with resultant delay of diagnosis.

In our study, early symptoms (epistaxis-nasal obstruction) were non specific taken lightly by the patients and treated symptomatically by non minded doctors waiting long time for more warning late symptoms (facial deformity-sensory changes) to be referred to the university hospital, so the majority of our patients were T3&T4.

Amongst the malignant epithelial tumours in this series, squamous cell carcinomas were the commonest, constituting 53.5%., second is the adenoid cystic carcinoma (21.4%), and undifferentiated carcinoma was (8.9%). These results were similar to those who reported that squamous cell carcinoma are the most common sinonasal malignancies19 and those who said that the adenoid cystic carcinoma and adenocarcinomas are less common tumours5. Also, There was a study who repoted that adenoid cystic carcinoma is the most common minor salivary gland tumour occurring in the sinonasal tract, followed by adenocarcinomas and muco-epidermoid carcinoma19 . Several variants of carcinoma are often considered variants of squamous cell carcinoma of the nasal cavity and paranasal sinuses. These include basaloid squamous cell carcinoma, spindle cell carcinoma and verrucous carcinoma which have been rarely observed in the sinonasal region 20,21 . Basaloid squamous cell carcinoma is very aggressive neoplasm with early both intracerebral and distant metastasis with median survival around one year [21].In our study, basaloid squamous carcinoma carries the worst survival as none of our two patients lived more than 18 months. Spindle cell carcinoma has been named and misnamed many times. The confusion has sometimes led to clinical consequences. Therefore,

one must understand that this neoplasm is a variant of squamous cell carcinoma. Although it has a component that resembles spindle mesenchymal cells, these are simply dedifferentiated squamous cells. Immunohistochemistry can be used to view these same spindle cells. Any evidence of keratin (a broad range of molecular weight is the most useful finding) and indicates the true squamous nature [22].

The salivary gland-type of neoplasms are said to arise from the surface epithelium [23]. In general, these are more frequent than the usual adenocarcinomas and are aggressive tumors, but with a better outcome as compared to similar tumors arising elsewhere in the head and neck region [24]. In adenoid cystic carcinoma from other sites, a high histologic tumour grade (e.g., solid pattern vs. cribriform or tubular patterns) entails a worse prognosis. Such association is not found in maxillary adenoid cystic carcinoma. A possible explanation is that most adenoid cystic carcinoma of the sinuses are so clinically advanced at presentation that tumour grading is no longer practical [19] .

Adenoid cystic carcinoma was seen in twelve of our patients (21.4%). In our study, six out of eight Adenoid cystic carcinoma still alive and free of disease at 2 years (at least) follow up. Muco-epidermoid carcinomas are also rare, but prognosis depends on histological grade with excellent prognosis for low grade tumour [23] Only four cases in our series, two were low grade muco-epidermoid carcinoma followed up to 42 months with neither recurrence nor metastasis. The other 2 cases were high grade with one patients died at 22 months while the other still alive at 3 years postoperative

Undifferentiated carcinoma is a high-grade tumour with very poor prognosis with 50% of patients died before one year postoperatively. They need to be distinguished from other poorly differentiated sino-nasal tumours as olfactory neuroblastoma (which has fairly good prognosis), since they require aggressive therapy that includes a combination of craniofacial resection, chemotherapy and radiotherapy [25]. In current study, there were five cases of undifferentiated sino-nasal carcinoma which is an example of a high-grade tumor

and two of the cases showed intracranial extension and postoperative lymph node metastasis. Survival at 2 years was only 25% in spite of multimodality treatment including craniofacial resection and second stage neck dissection plus chemoradiation.

Adenocarcinomas without a specific salivary gland pattern usually arise in the middle turbinate or in the ethmoid sinus the majority seen to arise from the mucosal lining rather than from the adjacent glands 26. The non-salivary adenocarcinomas arises from the lining epithelium termed as the non-enteric type, while the other set, 'enteric' type is usually secondary to epithelial metaplasia in response to wood dust or other occupational hazards (4). We have only three cases in current study with negative history for such hazards.

In current study, we applied combined therapy protocols for those T3&T4 where surgery followed by radiotherapy plus or minus chemotherapy, this strategy supported by study done by St-Pierre 27 which demonstrated that survival rate was 58% for those of combined therapy whereas, surgery or radiotherapy alone resulted in 20%, 15.8% respectively in case of squamous cell carcinoma

Our decision for subcranial approach was taken if the tumour attacking bony skull base without true intracranial invasion hoping to eradicate the disease and preserving contralateral olfaction, this is as had been documented by Dale Browne et al 28 and Fliss et al,[29] while that for anterior craniofacial resection if skull base was destructed and if there were intracranial invasion as documented by Ganly et al [30].

Valente, et al [31] concluded that, neoangiogenesis, expressed by microvessel density, together with proliferative activity in neoplastic cells is a pathologic marker with strong prognostic impact in sinonasal carcinomas. Therefore, it may be a useful tool in this field so as to carry out therapeutic protocol planning which may be further enhanced by the adoption of the more recent antiangiogenic molecules.

Conclusion :

Sinonasal epithelial neoplasms are uncommon, benign neoplasm (invert-

ed papilloma) is locally aggressive disease with high tendency for recurrence and may harbors foci of epidermoid carcinoma, so entire postoperative tissue sampling for histopathology is mandatory. Endoscopic and external approaches are of equivalent results in favor for endoscopic approach to avoid open wound problems. Malignant neoplasms present late, environmental, occupational hazards and tobacco are incriminated. Advance in surgery and combined therapy improves locoregional control but still of bad prognosis.

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دراسة إكلينيكية وباثولوچية للأورام الطلابية للأنف والجيوب الأنفية

إن أورام الأنف والجيوب الأنفية الطلانية غير شائعة. الغرض من هذه الدراسة توضيح نسبة حدوث هذه الأورام، بيان أعراضها، أنواع الأنسجة الورمية من خلال فحص العينات المرضية مع دراسة الطرق العلاجية الجراحية وبيان نتائجها.

الطريقة : كل عينات الأنسجة المرضية للأورام الطلانية بالأنف والجيوب الأنفية خلال ٦ سنوات تمتد من ٢٠٠٠ - ٢٠٠٥ تم مراجعتها وتقسيمها إلى أورام حميدة وأورام خبيثة وتوضيح إرتباطها بأعراض الطبية، نتائج الفحوصات، وطرق التامل معها جراحياً وبيان نتائجها.

النتيجة : خلال ٦ سنوات تم فحص ١٣٩ ورم أنفى حيث وصل عدد الأورام الطلانية منها الى ١٠١ ورم بنسبة ٦ر٧٢٪. ضمن هذه النسبة يوجد ٤٥ ورم حميد (٥ر٤٤٪) و٥٦ ورم خبيث (٥ر٥٥٪) ويحدث معظمها فى الذكور. الأورام الحميدة كلها أورام حليمية منها ٣ أورام حلييمية مقلوبة و٤٢ ورم حليمى منقلب. الورم الحليميس المنقلب إرتجع فى ٥ حالات بنسبة (٩ر١١٪) وتم إكتشاف خلايا سرطانية بشكل متزامن فى حالتين (٨ر٤٪) وبشكل تالى فى حالة واحدة من الحالات المرتجعة عندالمرة الثالثة (٢٠٪) ولاتوجد فوارق ذات أهمية من ناحية النتائج بين التدخل الجراحى باستخدام مناظير الجيوب الأنفية وبينس الفتح الخارجى. الأورام الخبيثة غالبيتها أورام حرشفية سرطانية بنسبة (٢ر٥٣٪) وتأتى فى المرتبة الثانية الأورام السرطانية الغددية الكيسية بنسبة (٤ر٢١٪) ويعزى الى التلوث البيئى والتدخين كأسباب مؤدية إلى السرطان. على الرغم من التدخل الطبى متعدد الأركان ويشمل التدخل الجراحى والعلاج الاشعاعى والعلاج الكيماوى مجتمعين لإحداث أفضل النتائج مازالت النتائج دون المرجو منها.

الخلاصة : الأورام الطلانية للأنف والجيوب الأنفية غير شائعة. الأورام الحليمية ذات طبيعة حادة ولها نوايا عالية للإرتجاع وربما تحوى خلايا سرطانية ولذلك يجب فحص كل العينة المرضية وتتساوى نتائج التدخل الجراحى بالمناظير مع التدخل الجراحى بالفتح الخارجى. الأورام الخبيثة تظهر أعراضها متأخرة. التدخين والتلوث الصناعى ربما تكون مسببة لها. التقدم الجراحى ساعد على السيطرة الموقعية للمرض لكن تظل النستائج سيئة.